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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/889,099

10/22/2001

Kurt Nattermann

VO-542

7951

7590

01/29/2004

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EXAMINER

LEURIG, SHARLENE L

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/889,099	Applicant(s) NATTERMANN ET AL.	
	Examiner Sharlene Leurig	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on December 19, 2003 has been entered and acknowledged by the Examiner. Claims 1 and 5 have been amended.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollkommer et al. (6,246,171) in view of Aratani et al. (4,671,814) (of record).

Regarding claim 1, Vollkommer discloses a radiator of homogeneous luminance (column 11, line 27; column 13, line 19) with a front pane and a rear element (Figure 6b, elements 207 and 208), wherein spacer elements extending from the front pane to the rear element include one end in contact with the front pane and an opposing end in contact with the rear element (column 6, line 66). A gaseous filler is introduced into a space between the front pane and the rear element and is at a lesser pressure (10 kPa to 100 kPa) than a pressure of the surrounding atmosphere (column 17, lines 3-5).

Vollkommer lacks disclosure of the chemical or thermal tempering of either the front pane, the rear element, or both.

Aratani teaches a chemical and thermal tempering treatment for glass used in liquid crystal displays and plasma displays in order to strengthen the glass and prevent warping, in order to facilitate thinner devices that are suitably strong (column 1, lines 10-26).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the radiator of Vollkommer to have one or both of the front pane and the rear element chemically and thermally tempered in order to improve the strength of the glass components, as taught by Aratani.

Regarding claim 2, Vollkommer further lacks disclosure of the softening temperature of the glass.

Aratani teaches a thermal tempering of glass within a temperature range of 650 degrees Celsius or less, and preferably between 400 and 600 degrees Celsius, in order to prevent the glass from becoming distorted (column 6, lines 49-55). The claimed limitation of the glass viscosity being 13.6 dPas at a temperature of 550 degrees Celsius is simply a recitation of a softening point of the glass. Therefore if Aratani teaches the thermal tempering of the glass at a temperature below 650 degrees Celsius, and preferably between 400 and 600 degrees Celsius, in order to prevent distortion of the glass in order to prevent softening, the claimed limitation of 550 degrees Celsius or more falls into the range taught by Aratani.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the radiator disclosed by Vollkommer to have tempered glass

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plates made of glass that reaches its softening point at a temperature of above 550 degrees Celsius, as taught by Aratani, in order to assure sufficiently strong glass.

4. Claims 3 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollkommer et al. (6,246,171) in view of Aratani et al. (4,671,814) (of record) as applied to claim 1 above, and further in view of Kent et al. (WO 98/52184) (of record).

Regarding claims 3 and 16, Vollkommer discloses a thickness of the front pane and the rear element to be 2.5 mm (column 13, line 40), and therefore lacks disclosure of a front pane or a rear element between 1.5 mm and 2.1 mm in thickness.

It would have been obvious to one of ordinary skill in the art at the time of the invention to decrease the thickness of either the front pane or the rear element or both to be within the claimed range of 1.5 mm to 2.1 mm in order to make a thinner, lighter device, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Vollkommer further lacks disclosure of the thermal tempering of the panes.

Aratani teaches chemically and thermally tempering glass for electronic devices in order to improve the glass strength as well as forming a glass that has a viscosity of 13.6 dPas at a temperature greater than 550 degrees Celsius, but lacks disclosure of the specifics of the thermal tempering.

Kent teaches the general process of thermal tempering, which comprises heating and cooling glass to place it under high compression, resulting in fully tempered glass at

15,000 psi and partially tempered glass at 10,000 psi (page 11, lines 1-2). These values correspond to more than 60 MPa.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Vollkommer's radiator with glass being thermally tempered in order to improve its strength, as taught by Aratani, and further modifying it with glass tempered at greater than 60 MPa, as taught by Kent, since Kent teaches that the claimed range is standard in the thermal tempering art.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vollkommer et al. (6,246,171) in view of Aratani et al. (4,671,814) (of record) as applied to claim 1 above, and further in view of Duke et al. (3,573,072) (of record).

Vollkommer discloses wall thickness of the front pane and the back element to be greater than 0.5 mm (column 13, line 40), but lacks disclosure of thermal or chemical tempering of the glass.

Aratani teaches chemically and thermally tempering glass for electronic devices in order to improve the glass strength, but lacks disclosure of the specifics of the thermal tempering.

Duke teaches a glass material that is chemically tempered to values of more than 160 MPa (Table in column 8). 160 MPa is equivalent to 23,206 psi.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Vollkommer's radiator with thermally and chemically-tempered glass in order to improve its strength, as taught by Aratani, and to further modify it to

have glass tempered at greater than 160 MPa, as taught by Duke, as it has been shown to be well-known in the art to create glass with such high surface tension.

6. Claims 5-8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollkommer et al. (6,246,171) in view of Ochiai et al. (EP 0 851 452 A2) (of record).

Regarding claim 5, Vollkommer discloses a radiator of homogeneous luminance (column 11, line 27; column 13, line 19) with a front pane and a rear element (Figure 6b, elements 207 and 208), wherein spacer elements extending from the front pane to the rear element include one end in contact with the front pane and an opposing end in contact with the rear element (column 6, line 66). A gaseous filler is introduced into a space between the front pane and the rear element and is at a lesser pressure (10 kPa to 100 kPa) than a pressure of the surrounding atmosphere (column 17, lines 3-5).

Vollkommer lacks disclosure of a coating of a ductile polymer material formed on either the front pane or the rear element.

Regarding claim 5, Ochiai teaches forming a coating of a ductile polymer material on the front glass substrate of a plasma display in order to protect it from damage (page 5, lines 29-33). Any material that can be coated onto something can be referred to as ductile, since it is capable of being manipulated.

Regarding claim 6, Ochiai discloses a coating made of a material such as a polymer of polyurethane or of silicone (page 5, lines 34-38).

Regarding claims 7, 8 and 12, Ochiai discloses a coating with a thickness of more than 6 microns and less than 50 microns (page 5, lines 50-51).

Therefore regarding claims 5-8 and 12, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display disclosed by Vollkommer to have a coating of a ductile polymer such as a polymer of polyurethane or silicone in order to protect it from external damage, as taught by Ochiai.

7. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollkommer et al. (6,246,171) in view of Ochiai et al. (EP 0 851 452 A2) (of record) as applied to claims 5-8 and 12 above, and further in view of Schmitt et al. (4,971,887) (of record).

Vollkommer discloses a radiator with all the limitations discussed above, but lacks disclosure of a ductile polymer coating on the glass panes.

Ochiai teaches forming a ductile polymer coating on the front pane of a display device in order to protect it from external damage.

Both Vollkommer and Ochiai lack disclosure of a primer.

It is well known in the art to deposit a primer on glass to improve the adhesion of a coating and the glass.

Schmitt teaches the use of a primer made of hexamethyl disilazane (column 7, lines 60-61) on a substrate made of a material such as glass (column 5, lines 19-21) in order to improve adhesion of the glass and a coating.

Therefore regarding claims 9 and 13, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Vollkommer's display with a protective polymer coating as taught by Ochiai and to further modify it with a primer made of hexamethyl disilazane in order to improve the adhesion of the coating to the glass, as taught by Schmitt.

7. Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollkommer et al. (6,246,171) in view of Ochiai et al. (EP 0 851 452 A2) (of record), further in view of Schmitt et al. (4,971,887) (of record), as applied to claim 9 above, and further in view of Aratani et al. (4,671,814) (of record).

Vollkommer discloses a radiator with all the limitations discussed above, but lacks disclosure of a polymer coating formed on the glass panes, primer, or the chemical or thermal tempering of either the front pane, the rear element, or both.

Ochiai teaches forming a protective polymer coating on the front pane in order to protect it from external damage, but also lacks disclosure of a primer or of chemical or thermal tempering.

Schmitt teaches a primer to promote the adhesion of layers on glass, but also lacks disclosure of chemical or thermal tempering.

Aratani teaches a chemical and thermal tempering treatment for glass used in liquid crystal displays and plasma displays in order to strengthen the glass and prevent warping, in order to facilitate thinner devices that are suitably strong (column 1, lines 10-26).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the radiator of Vollkommer to have a protective polymer coating on the front pane, as taught by Ochiai, to further modify it to have a primer formed on the glass to improve the adhesion of the glass and the polymer coating, as taught by Schmitt, and to further modify it to have one or both of the front pane and the rear element chemically and thermally tempered in order to improve the strength of the glass components, as taught by Aratani.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vollkommer et al. (6,246,171) in view of Ochiai et al. (EP 0 851 452 A2) (of record), further in view of Schmitt et al. (4,971,887) (of record), as applied to claim 9 above, and further in view of Aratani et al. (4,671,814) (of record) as applied to claim 10 above, and further in view of Salavin et al. (6,124,676).

Vollkommer discloses a radiator with all the limitations discussed above, including spacers formed between the front and back planes, but lacks disclosure of a polymer coating formed on the glass panes, primer, the chemical or thermal tempering of either the front pane, the rear element, or both, or wavy spacers.

Ochiai teaches forming a protective polymer coating on the front pane in order to protect it from external damage, but also lacks disclosure of a primer, of chemical or thermal tempering, or of wavy spacers.

Schmitt teaches a primer to promote the adhesion of layers on glass, but also lacks disclosure of chemical or thermal tempering or of wavy spacers.

Aratani teaches a chemical and thermal tempering treatment for glass in order to strengthen the glass, but lacks disclosure of wavy spacers.

Salavin teaches a plasma display device having wavy spacers (Figure 5b, element 11) as a means of sufficiently spacing the substrates without necessitating exact placement (column 6, lines 50-55).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the radiator of Vollkommer to have a protective polymer coating on the front pane, as taught by Ochiai, to further modify it to have a primer formed on the glass to improve the adhesion of the glass and the polymer coating, as taught by Schmitt, to further modify it to have one or both of the front pane and the rear element chemically and thermally tempered in order to improve the strength of the glass components, as taught by Aratani, and to further modify it to have spacers formed as wavy lines in order to provide good support without necessitating precise placement, as taught by Salavin.

9. Claims 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vollkommer et al. (6,246,171) in view of Aratani et al. (4,671,814) (of record) as applied to claim 1 above, and further in view of Salavin et al. (6,124,676).

Vollkommer discloses a radiator having a front and back panel and spacers separating the two, but lacks disclosure of wavy spacers, or of chemically or thermally tempered glass.

Aratani teaches chemically and thermally tempering glass in electronic devices in order to increase the strength, but also lacks disclosure of wavy spacers.

Salavin teaches a plasma display device having wavy spacers (Figure 5b, element 11) as a means of sufficiently spacing the substrates without necessitating exact placement (column 6, lines 50-55).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the radiator of Vollkommer to have glass that is thermally and chemically tempered in order to improve its strength, as taught by Aratani, and to further modify it to have spacers formed as wavy lines in order to provide good support without necessitating precise placement, as taught by Salavin.

Response to Arguments

10. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharlene Leurig whose telephone number is (571) 272-2455. The examiner can normally be reached on Monday through Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Sharlene Leurig


ASHOK PATEL
PRIMARY EXAMINER